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mical analysis of plants to the highest degree of perfection; and shall give the completest account of the most suitable processes for the chemical analysis of vegetable substances, in all cases, in the most simple way, and at the same time most certain, so

that, by repeating the processes with care, we shall always obtain the same results. The ordinary prize of the society is a gold medal, or 30 ducs. (£13 17 6) and the papers must be written in Dutch, French, Latin, or German.

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## DISCOVERIES AND IMPROVEMENTS IN ARTS, MANUFACTURES &c.

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*Patent of Mr. John Cragie of Craven-street, London, for an improved Kitchen Fire-place.*

THE principal novelty in Mr. Cragie's fire place is the application of the sand bath to culinary purposes, which has hitherto been only used for those of a chemical nature. The directions given by the patentee for the construction of his fire place are as follows.

"A foundation or basis is to be placed in some convenient part of the kitchen of stone or brick, of about four feet long, by about two feet eight inches in breadth, and about twenty inches in height; at one end of which in front is to be placed the chimney grate eighteen inches wide and six deep.

"On the foundation in the centre at nineteen inches distant from each other, are to be raised two sides in stone or brick, the whole length thereof, about eight inches in height; on these sides is to be placed a pan of cast iron, of sufficient size to cover the whole, with rims to rest on the sides, but leaving a small space vacant (about half an inch) from each side below; the depth of the pan may be about five or six inches, and will be raised above the basis, so as to leave an aperture throughout of about an inch and a half; at the end of the furnace opposite to the fire grate the aperture will terminate in a flue of brick or iron, to convey the smoke into the chimney of the house, which flue should be furnished with a register or damper.

"A plate projecting from the lower end of the pan, will form the top of the fire place, of eighteen inches by six or eight; the sides will be formed

of fire brick; the back, of fire brick will ascend in a sloping direction towards the top under the pan.

"A frame of iron will be placed to receive the door or front, which will be in the clear about sixteen inches in width by about eighteen inches in depth; that is to say, to cover the ash-pit four inches, and about twelve inches above the grate for the fire place, in front of which there should be an inner grate five or six inches high; this door must have in the lower part of it, about an inch and a half from the bottom, a small door of about three inches wide, by two in depth, to furnish air through the ash-pit. When wood is used for fuel, the depth of the fire place may be twelve inches instead of six."

The purposes to which these fire places are proposed to be applied are thus stated by Mr. Cragie. "The iron pan being filled with dry sand will form a sand bath, with heat sufficient, according to the depth to which vessels are placed in it, for all ordinary purposes, and being well heated will retain the heat for a considerable time, especially if the doors are kept close shut; the plate at front will serve for boiling or frying; an oven for baking may be fixed at the flue; roasting may be performed to perfection before the door in front, even with the door shut. It will be found convenient to have the meat to be roasted, suspended from a moveable fire screen."

The principal advantage of this fire place, intended by the patentee, is that of diminishing the expenditure of fuel, by confining the heat, and regulating the access of air. He states the saving of fuel to be full two

thirds of that used in common fire places for the same effect.

Fire places on this construction are fitted up for public inspection at Messrs. Oddy and Mitchells, Holborn, corner of Fetter-lane, London.

*Observations...* This fire place possesses advantages which render it worthy of public attention. The use of the sand bath in kitchens, has long been thought deserving of experiment by competent judges, and probably would have been introduced before this, had not the dominion of those lower regions rested on persons remarkably jealous of interference, and singularly tenacious of old customs with all their rights and appurtenances. It is probable however that time may soften their rigour in this respect, when they perceive how the sand bath preserves the brilliancy of their sauce-pans unimpaired, removes all danger of burning the butter, and saves all that labour of polishing copper and tin, to which they have such a just abhorrence. In short, by the proper use of the sand bath the business of cookery may be rendered so neat, cleanly, and free from all exposure to inordinate heat, that the most delicate ladies would find nothing to distress their susceptible nerves in performing them, but on the contrary might experience such amusement as would be a considerable resource from the ennui that consumes them, and against which they are at present obliged to employ so many miserable expedients.

On the sand bath, glass and china vessels may be used for boiling without any danger, by which some operations of cookery may be performed with peculiar advantage; baking also may be performed on the sand bath with great convenience, by merely placing the article to be baked on a dish at a proper depth, and covering it over close with an earthen vessel. A few trials would soon show the proper way of managing the heat; and the only cautions necessary would be to avoid making prodigious fires, and not to spill greasy liquors on the sand on account of the bad smell which they would occasion.

*Patent of Mr. John Penwarne of Pancras, near London, for a Method of giving to Statues and other Ornamental Works in Plaster (Gypsum) an appearance nearly resembling the finest Statuary Marble,*

Mr. Penwarne thus describes his method of improving gypsum casts. "The principle of my invention is to impregnate the plaster cast with alum; in order to effect which I pursue the following process as being the easiest and best adapted for the purpose. A solution of alum in water is prepared in a proportion of about one pound of alum to every three pints of water (but is it not necessary to observe the exact proportions, as a greater, or less quantity of alum will answer the intended purpose). The liquor is made to boil sufficiently to dissolve the quantity of alum put into it. The plaster cast, previously dried, and properly finished or cleared off, is then immersed in this solution, and suffered to remain therein from fifteen minutes to half an hour; it is then taken out and suspended over the vessel containing the solution; and having been suffered to cool for two or three minutes, according to the size and bulk of the figure, some of the solution is dipped up and thrown over it, or applied to it by means of a sponge or linen cloth, and which is continued till the alum forms a fine crystallization over its surface of a due degree of thickness; when it is sufficiently done it is set by to dry, and when it is perfectly so it may be brought to a degree of smoothness, or polish, by means of sand-paper, or glass paper, and finished by being rubbed with a fine linen cloth slightly moistened with clean water. As most vessels of metal, except those of tin or lead, are liable to impart a stain to the liquor, I make use of wooden vats, which are conveniently heated by steam introduced through a leaden pipe from a boiler."

Casts managed in this manner possess the beautiful whiteness and transparency of white marble, at the same time scarcely yielding to it in hardness, and (for the purposes of interior decoration) almost equal to it in durability. They are not affected by